

# Company Profile



Heritage and Achievements

<b>Version - Date</b>	ver1 – 21 Febbraio 2011
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## Company Profile – Background Experience

Elital (the name is Elettronica Italiana) was founded in 1986 and has rapidly expanded its capabilities in the design and manufacturing of mechanical, electrical and electronic equipments, subsystems and complete products serving the civil, industrial, space and military market. More informations about the Elital products, technologies and achievements throughout the 25 years from its foundation are available in detailed product and technology presentations. It's a general company profile.

The strength of Elital stands in the mix of skills, available technologies and people experiences. Besides the company's own personnel, Elital has established good professional relationships with experts coming from both the space and non-space sectors, and with the universities: L'Aquila, Tor Vergata Roma and Perugia are the main ones. Internally, Elital has progressively built a capable engineering design group that can handle both mechanical and electrical/electronic and software requirements in a cost-effective manner exploiting the features of most modern CAD tools. On the manufacturing side Elital is quite strong in five main areas, where the Company has invested, and continues to invest, on modern and capable manufacturing tools and processes.

The five manufacturing areas are:

- **Engineering**, with Mechanical, Electronical, Software expertise;
- **Mechanical workshop**, which is equipped with rather unusual, and hard to find elsewhere, tooling machines;
- **Carpentry workshops**, which is mainly devoted to the production of shelters, vans, casing, racks, for ground mobiles and fixed installations for both civil and military applications;
- **PCB design and production**, for both professional space and non-space use. Elital is a current top quality and specialized PCB supplier of renown national aerospace companies with Space qualified process;
- **Painting and Silkscreen**: where Elital owns proprietary processes and skills enabling a cost effective production of panels cleverly supporting the human engineering aspects of the design;
- **Cabling**: this including PCB mounting, RF cabling and power cabling. Military standards are applied into the department, Military equipments are in manufacturing phase now.

Since its creation, Elital strong points have been on the design and development of electronics and mechanics equipments, and the design, manufacturing, installation and testing of small and large ground Earth stations (visit on internet the products available). Recently the MOBSAT terminal, entirely designed, developed and produced by Elital has captured a fair market share in this products class. In the space market Elital products, especially in the PCB area, have found good acceptance also thanks to the innovation brought about in some specific technologies.

Elital attention to the material and processes resulted in the setting up of a laboratory equipped with test instrumentation able to perform chemical, metallographic, and electronic tests on samples and test specimens during the fine trimming of new processes and the periodic certification of well established ones in production.

**Facilities:**

Elital works in space, defense and aeronautics fields providing solutions for the customer requirements and with own products.

Elital is a satellite antenna and communication systems designer and producer, and Hirel space qualified RF PCB supplier, military and aerospace, such as companies: Thales Alenia Space, Telespazio, ESA, Selex Communications, Selex Sistemi Integrati, ESA, ASI, INFN, Enea, Ote, Elsacom, etc.

Elital srl plant:

L'Aquila: 6000 square meters with Engineering, Mechanical workshop, PCB manufacturing, Harnessing-Cabling, Silkscreen and Tests laboratories.

Roma: representative office with specialized engineers

The main facilities are:

***Engineering CAD Softwares:***

- 3D Modeler for Mechanics design and Simulation
- HFSS for microwave components
- Ansys and HyperMesh for thermomechanical analysis
- Mentor Graphics and Zuken Redac - PCB development software
- Microchip - Development software
- Analog Device DSP development software
- Moog and Danhair motion control software and tools
- Corel Draw for Silkscreen development

***Engineering Cam Softwares:***

- Pro/E (CNC) and FeatureCAM for Computer Machining in mechanics department
- Cam350 for PCB department and Gerber working

***Mechanical Laboratories Instrumentations:***

- Mechanical test facilities,
- CMM equipments.
- Geometrical measurement equipment,
- Load test facility,

### ***Mechanical Facilities:***

Elital srl is expertises of strategic products and technologies, such as M-GSE, Special Antennas platforms, Laboratories on Veichles/trucks, aeronautics products, and so on.

The machines available are dedicated to this target and all the plant is optimized to produce high quality products.

Internally to the integration department is present a restricted access area dedicated to military, strategic and special product.

In Elital srl desing and manufacture missiles rocket lanchers pointing devices hardware and integration of it on ramps.



This pictures is public domain.

Into the metalworking are available:

- Drilling machines
- Milling machines
- Turning machines
- Weding machines
- Grinding machines
- Punch machine
- Bending machines
- CMM machines



And other machines to complete the manufacturing cycle are fully internally.

Relevant are the various partnerships with other manufacturing company for non strategic components manufacturing, very big size of machining, and so on, to guaranty to the customer the comply of the product.

***PCB Manufacturing and Testing Facilities:***

Elital is equipped with a clean room Class 1/100.000, dedicated to advanced PCB manufacturing and testing. The department can work with any type of RF laminates (PTFE, Alumina, Polymide), also in dual and multilayer configuration, and the technological process is entirely Space qualified. A special procedure has been developed to integrate buried resistors and blind via holes in multilayer PTFE laminates.

***PCB Testing:***

- Chemical tests
- X ray tests
- Ductility tests
- Peel and pull strength tests
- Dimensional tests
- Metallographic tests

**Internal Departments**

**Metal Working Department** - in qualification for space flight hardware also

**Printed Circuit Board** - Space Qualified – relevant program ESA Sentinell RF PCB

**Cabling** - MIL STD qualified

**Silkscreen** - MIL STD qualified

The company is ISO9001 certified (since 1994).

The company is compliant qith ISO9100 (certification in progress).

***Mechanical Platforms:*****Small Platforms (under 150kg).**

The pictures shown a 3 axis platform. The platforms is driven by 2 Brushless servomotors for Azimuth and Elevation axis plus a DC motor for optics rotation.

The platform is the fastest ad reliable on the market.





### Medium Platforms (3000 – 5000Kg).

Parallel cinematics platform

Elital personnel during installation of the platform



### Large Platforms (Over 5000Kg.)

Elital personnel during installation of the platform

The pictures shown a 22tons antenna structures and Elital personnel during installation. There is a lot of installation of this platform, S. Diego California, Dubo in Texas, Weco Australia, Rome (Pratica di Mare Airport), ASI in Matera (Agenzia Spaziale Italiana), and so on. The pictures shown the military antenna installed in Parigi military base.



### Radar Platforms (manteinance of radar platforms – no manufacturing)



## Integration Facilities





## ***Heritage in Large satellite Antenna Platforms***

Elital srl meet the know how of large antenna positioning platforms (both communication and Military) and MGSE technology.

Resonance frequencies, Accelerations of big masses, High accuracy positioning, Reliability (a satellite antenna have a medium lifetime of 15 year and have a few minutes of out of service per year!), maintainability, usability, upgrading, and so on.

### **Gimbal and Platforms**



Large Antenna Platform

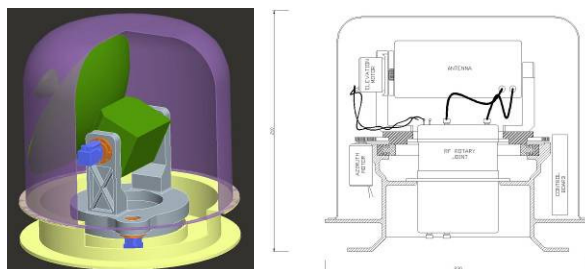


Large slewing bearing and pinions. 2 motors for each axis to avoid backlash



Large slewing rings with pinions.





Maritime and Aircraft Antenna Positioners pre-designed for Space Engineering



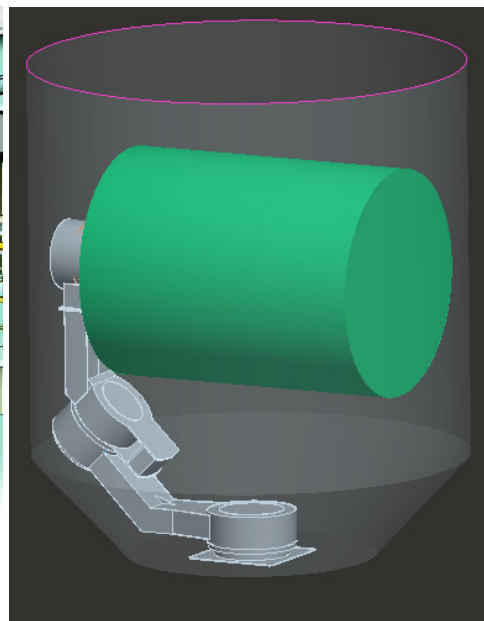
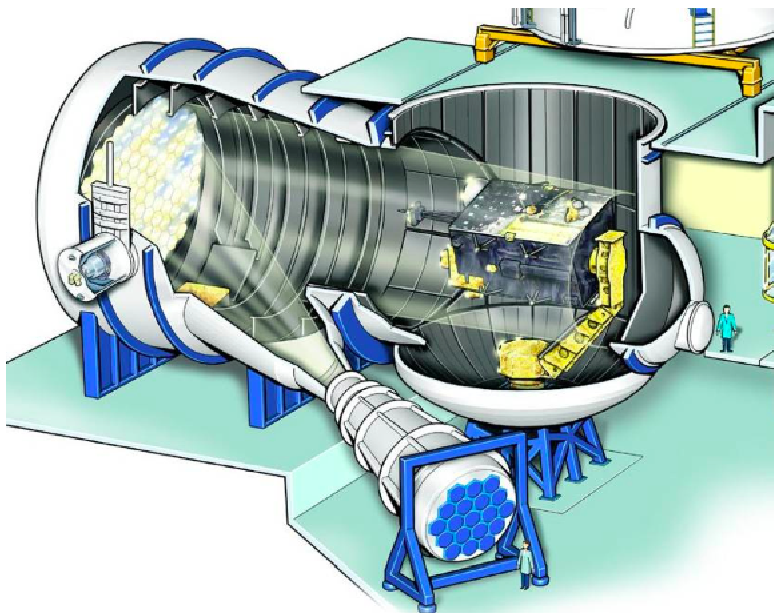
Big Dish (7mt) Antenna Frame manufacturing

***Background experiences on M-GSE on the last 3 years and products:***

- design and manufacturing of SOW-RIG – Solar Array Wing Test Equipment.
- design and manufacturing of Propulsion Integration Stand
- design and manufacturing of Kazasat Payload handling platform
- design and manufacturing of Kazasat Payload Transport Container
- design and manufacturing of KompSat handling platform
- design and manufacturing of KompSat transport container
- design and manufacturing of GlobalStar 2 Handling Hardware
- design and manufacturing of GlobalStar 2 Vacuum stands
- design and manufacturing of GlobalStar 2 Transport Containers
- design and manufacturing of Lifting hardware
- design and manufacturing of Acoustic Cabin hardware.
- design and manufacturing of Multi Layer Insulating covers stow and transport equipment.
- design and manufacturing of systems for military equipments
- design and manufacturing of mil std equipment racks for navy

Elital has been participate on October 2010, at ESA bid as prime contractor, for the design and manufacturing of the internal manipulator for Large Space Simulator equipment in Estec. This manipulator is the mechanical equipment for satellite handling during the final test in space environment. The LSS is the biggest space environment simulator in europe.

The manipulator have to work at 0 pressure, from -190°C to +190°C, 2.4kWm<sup>2</sup> solar radiating, have a weight of 20 tons, and is able to carry a 5 tons spacecraft (7tonns at zero position).



The pictures shown: the left one, is the overall system of the LSS, the primary chamber has 10mt of diameter and 15mt of height. It's shown the arm now used for the tests. The second one is the proposed arm configuration.

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## M-GSE



Spacecraft Transport Containers. First Picture shown 6 container ready to deliver from Elital,



KazaSat Payload Transport container and trolley. In the picture is shown the payload panel mokup mounted on the trolley

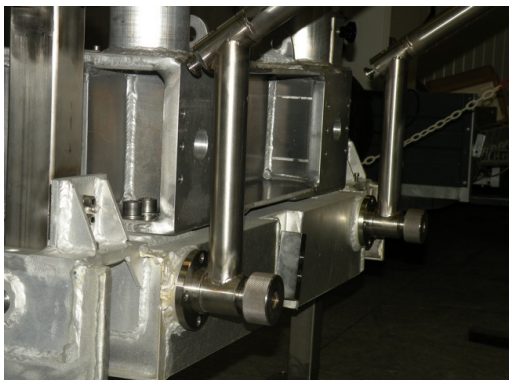


Acoustic Cabin platforms and trolley, in pictures in shown the S/C Interface for GlobalStar 2 and Galileo IOV.



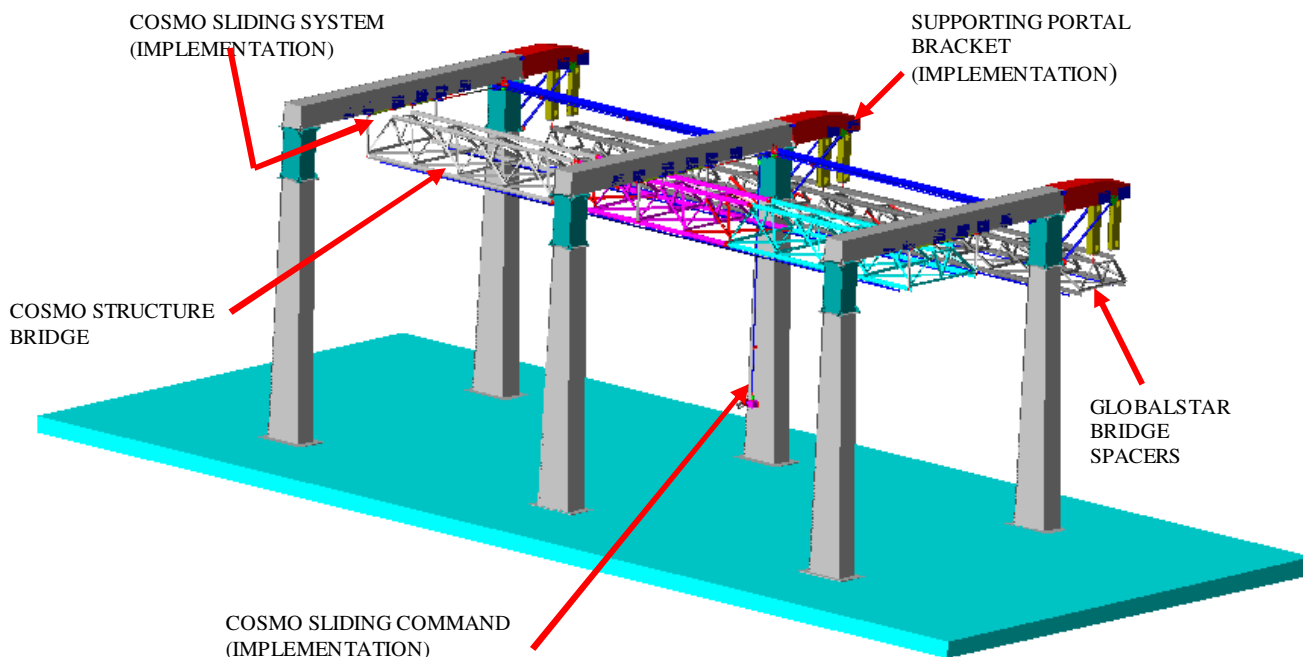


SIS (Spacecraft Integration Stand) for Spacecraft integrations



SIS for integrations and vacuum. The stand is not painted to avoid outgassing, no lubricant technology. The last pictures show the removable labels for vacuum environment.





Solar Array RIG

This M-GSE is installed into the clean room of Thales Alenia Space. Elital srl as been developed and manufactured the upgrading of the structure including the mechanical slides for the possibilities to change the positions of the rails. The rails are 12m longer.

#### ***Background on RF E-GSE and products:***

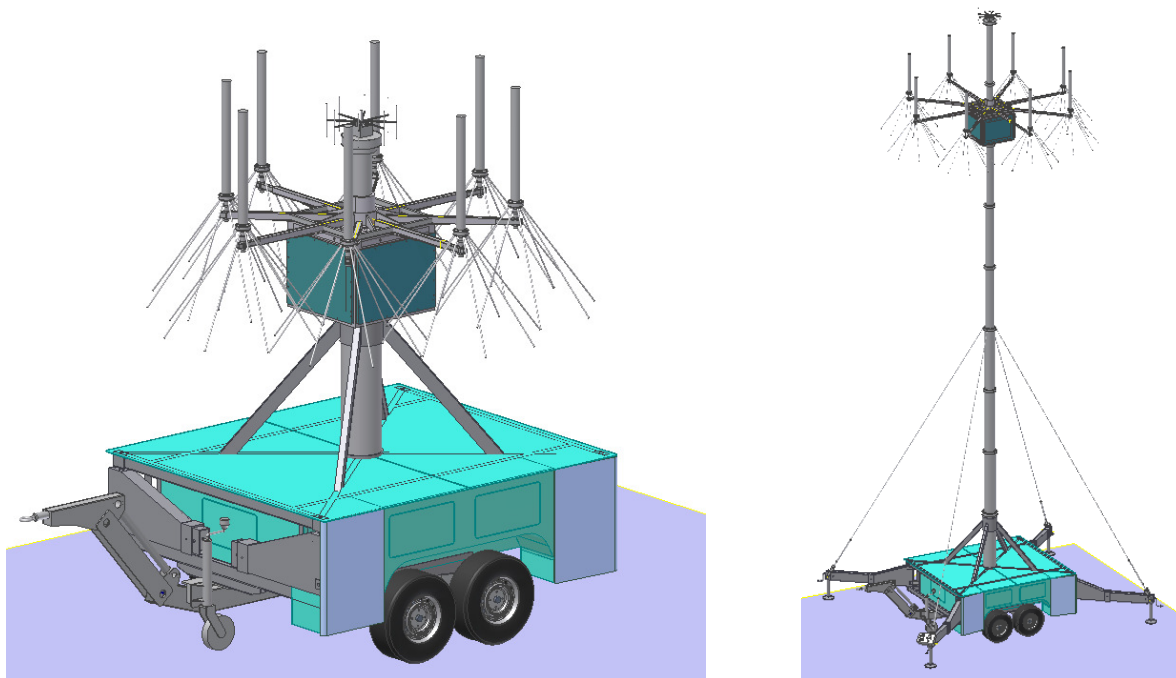
- design and manufacturing of Cosmo SkyMed RF Test Equipments
- design and manufacturing of Galileo High Performance LTS Down Converter
- design and manufacturing of the Multicarrier Generator for Thales Test Laboratories
- design and manufacturing of a Ka band SSPA
- design and manufacturing of special Antenna parts like Feed, OMT, etc.
- manufacturing of the Kompsat 5 Satellite RF SAR Calibrator made by corner reflector
- manufacturing of RF Flight PCB for Cosmo SkyMed Satellites, Kompsat5, Sicral 1B and other small programs.

#### **Automatic Test Equipments family:**

Battery Simulators,  
Battery Charge Discharge Units,  
Solar Array simulator,  
Pyro SCOE,  
Umbilical  
Main Power Distribution Units,  
Rack Power Distribution Units,  
Radio Frequency Down Converters,  
Radio Frequency Up Converters,  
Radio Frequency Filters,

### *Outdoor transportable platform*

Is now in CDR phase a transportable platform 12 mt height for antenna array. The trailer is compliant to the outdoor environmental standards.



The picture shown the antenna trailer in transportable and operative configuration. The mast is 12 mt height.

During the operations the antenna trailer is connected with a transportable laboratories on van. The van in integration phase.

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